



RANGER



RANGER

PIN AND SOCKET CONNECTOR - PUSH/PULL OR BREAKAWAY



Ranger's quick and easy mate and unmate feature makes it ideal for use in soldier-worn, harsh environment applications.

This rugged, light-weight, multipurpose connector can be used for signal and power applications. Multi-pin configurations are coming soon.

FEATURES & BENEFITS:

- Push/Pull Locking and Breakaway
- Function IP-68 & IP69K, >5,000 mating cycles
- Operating Temp Range:
-60°F to 257°F (-51°C to +125°C)
- Aluminum ruthenium plated body – lightweight yet rugged
- Diameter of male and female connector is smaller than a penny
- Custom Cable Assembly Available



HOW TO ORDER

Exmple Part Number : NX-A10YAR-P03XJG0-0000

| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | |
|-----------|------|-------|------|---------|--------|------------------|-----------|---------------|--------------|------------------|---------------------------|------------|
| Connector | Type | Style | Size | Version | Keying | Housing Material | Insulator | Contact Count | Contact Type | Contact Diameter | Termination Cross Section | Ground Tag |
| NX- | A | 1 | 0 | Y | A | R- | P | 03 | X | J | G | 0-000 0 |

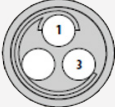
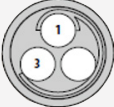
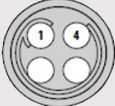
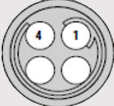
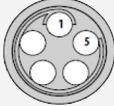
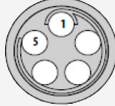
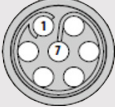

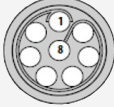
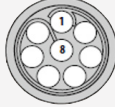
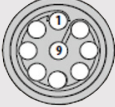

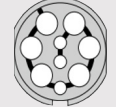
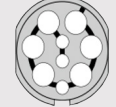
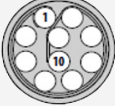
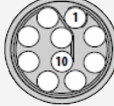
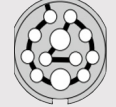
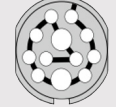
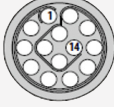
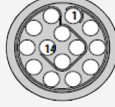
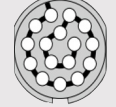
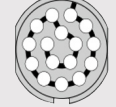
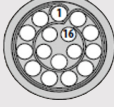
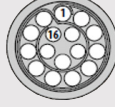
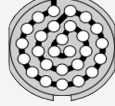
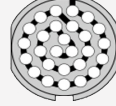
| 1. Connector | | 2. Type | | 3. Style | | 4. Size | | 5. Version | |
|--------------|--------|---------|----------------------|----------|--------------------------------|---------------------|--|------------|--------------|
| NX- | Ranger | A | Breakaway Plug | 1 | Cable Mount | Varies Based on P/N | | W | High Density |
| | | K | Breakaway Receptacle | 8 | Low Profile Outside Rear Panel | | | Y | Standard |
| | | S | Push-pull Plug | K | Low Profile Inside Rear Panel | | | | |
| | | G | Push-pull Receptacle | W | Docking (Panel) Plug | | | | |
| | | | | 6 | Cable and Panel Mount | | | | |

| 6. Keying | | 7. Housing Material | | 8. Contact Count | | 9. Contact Type | | 10. Contact Diameter | |
|-----------|-------|---------------------|---|------------------|----|-----------------|----------------------|----------------------|--------------------|
| A | Brown | R | Ruthenium over Nickel (Standard – Aluminum) | 02 | | U | Socket w/ PC Tail | B | 0.3mm |
| B | Red | | | | 03 | | V | Pin w/ PC Tail | C |
| C | Blue | M | Ruthenium Over Nickel (HD – Brass) | 04 | | W | Socket w/ Solder cup | F | 0.7mm |
| D | Green | | | | 05 | | X | Pin w/ Solder cup | J |
| | | | | 06 | | | | M | 6x0.3mm 4x0.5mm |
| | | | | Up to 27 | | | | P | 1.3mm |
| | | | | | | | | T | 2.0mm |

| 11. Solder Cup | | 12. Ground Tag | |
|----------------|----------------|----------------|-----|
| D | 26AWG | 0 | No |
| G | 22AWG | L | Yes |
| H | 20AWG | | |
| M | 28AWG 24AWG | | |
| S | 14AWG | | |



CONTACT CONFIGURATION

| Number of Contacts | Size 0 (Standard) | | Size 0 (HD) | | Size 1 (Standard) | | Size 1 (HD) | |
|--------------------|---|---|--|---|--|---|---|---|
| | Male | Female | Male | Female | Male | Female | Male | Female |
| 3 |  10A |  400V | | | | | | |
| 4 |  7A |  300V | | | | | | |
| 5 | | | | |  10A |  450V | | |
| 7 |  5A |  300V | | | | | | |
| 8 | | | | |  7A |  333V | | |
| 9 |  5A |  200V |  1A |  750V | | | | |
| 10 |  5A |  20 V | | | | | | |
| 12 | | |  1, 5A |  750V | | | | |
| 14 | | | | |  1 |  1 | | |
| 16 | | |  1,5A |  750V |  5A |  300V | | |
| 27 | | | | | | |  1A |  750V |

CONTACT CONFIGURATION:

Size 0 Standard

| Size | Insulator | Number of Contacts | Contact Diameter | Nominal current load per contact | Test Voltage | Rated Voltage | Termination | |
|------|-----------|--------------------|------------------|----------------------------------|--------------|---------------|-------------|-----|
| | | | mm | A | kV | kV | Solder | PCD |
| 0 | P | 03 | 0.9 | 10 | 1.200 | 0.400 | • | • |
| 0 | P | 04 | 0.7 | 7 | 0.900 | 0.300 | • | • |
| 0 | P | 07 | 0.5 | 5 | 0.900 | 0.300 | • | • |
| 0 | P | 09 | 0.5 | 5 | 0.600 | 0.200 | • | • |
| 0 | P | 10 | 0.5 | 5 | 0.600 | 0.200 | • | • |

Size 1 Standard

| Size | Insulator | Number of Contacts | Contact Diameter | Nominal current load per contact | Test Voltage | Rated Voltage | Termination | |
|------|-----------|--------------------|------------------|----------------------------------|--------------|---------------|-------------|-----|
| | | | mm | A | kV | kV | Solder | PCD |
| 1 | P | 05 | 0.9 | 10 | 1.350 | 0.450 | • | • |
| 1 | P | 08 | 0.7 | 7 | 1.000 | 0.333 | • | • |
| 1 | P | 14 | 0.5 | 5 | 0.900 | 0.300 | • | • |
| 1 | P | 16 | 0.5 | 5 | 0.900 | 0.300 | • | • |

Size 0 High Density

| Number of Contacts | Available Connector Styles | | Contact Type | | Part Number Key | | | | Contact Diameter | Termination Cross Section | | Contact Current Recommend | Test Voltage |
|--------------------|----------------------------|----|--------------|-------------|-----------------|---|---|---|------------------|---------------------------|-----------------|---------------------------|--------------|
| | | | | Termination | | | | | mm | AWG | mm ² | A | VDC |
| 09 | K1 | GK | Socket | Solder | W | M | M | 0 | 3x0.3 6x0.7 | 28 22 | 0.08 0.38 | 15 | 0.750 |
| | A1 | - | Pin | Solder | X | M | M | 0 | | 28 22 | 0.08 0.38 | | |
| 12 | K1 | GK | Socket | Solder | W | M | M | 0 | 10x0.3 2x.07 | 28 22 | 0.08 0.38 | 15 | 0.750 |
| | A1 | - | Pin | Solder | X | M | M | 0 | | 28 22 | 0.08 0.38 | | |
| 16 | K1 | GK | Socket | Solder | W | B | C | 0 | 0.3 | 28 | 0.08 | 1 | 0.750 |
| | A1 | - | Pin | Solder | X | B | C | 0 | | 28 | 0.08 | | |

Size 1 High Density

| Number of Contacts | Available Connector Styles | | Contact Type | | Part Number Key | | | | Contact Diameter | Contact Current Recommend | Test Voltage | Termination Cross Section | |
|--------------------|----------------------------|----|--------------|-------------|-----------------|---|---|---|------------------|---------------------------|--------------|---------------------------|-----------------|
| | | | | Termination | | | | | mm | A | VDC | AWG | mm ² |
| 27 | K1 | GK | Socket | Solder | W | B | C | 0 | 0.3 | 1 | 0.750 | 28 | 0.08 |
| | A1 | - | Pin | Solder | X | B | C | 0 | | | | 28 | 0.08 |

CONTACT SPECIFICATIONS, STANDARD RANGER TECH DATA:

Environmental and Testing

| Type | Performance | Standard |
|---------------------------------------|---|---|
| Tightness | IP68 / 1m IP 69K | IEC 60529 / MIL-STD-810F 512.4/5 DIN 40050-9 |
| Sand and Dust | Blowing sand and dust, settling dust | MIL-STD-810F 510.4/5 Procedure I / II DIN 40050-9 / IP6kx |
| Operating Temperature | -51°C up to +125°C | IEC 60512-6-11i+j |
| Thermal Shock | -65°C up to +150°C | EIA 364-32-E IEC 60068-2-14 |
| Humidity Cyclic | 85% up to 95% 28 up to 71°C | MIL-STD-1344A Method 1002.2 Type III IEC 60068-2-38 |
| Low Pressure (Rapid Decompression) | 59.1 kPa to 18.8 kPa | AECTP 300, 312 Procedure III (STANAG 4370) |
| Low Pressure | 57.2 kPa -55°C | MIL-STD-810F 500.4/5 IEC 60068-2-40 |
| Icing | Rime ice 6mm | MIL-STD-810F 521.2/3 |
| Corrosion Resistance | 96h salt mist, 5% salt solution 35°C | EIA-364-26B STANAG 4370, AECTP 300-309 MIL-STD810F 509.4/5 |
| Mold Growth | European fungus | IEC 60068-2-10 |
| Solar Radiation | | 60068-2-5 |
| Chemical Endurance | Several substances | ISO 16750-5 |

Mechanical Data

| Type | Performance | Standard |
|-------------------------|--|--|
| Mechanical Endurance | 5,000 mating cycles | IEC 60512-5-9-a EIA-364-09 |
| Vibration | | MIL-STD 1344 Method 2005 EIA-364-28 |
| Shock | 100g amplitude, half sine pulse of 3 ms, no discontinuity > 1 µs | MIL-STD 1344 Method 2004 EIA-364-27 |

Electrical Data

| Type | Performance | Standard |
|---|--|---------------|
| Contact resistance (over 5,000 mating cycles) | Contact diameter / resistance Ø 0.5mm <5 mOhm Ø 0.7mm <4 mOhm Ø 0.9mm <4 mOhm Ø 1.3mm <3 mOhm Ø 2.0mm <3 mOhm | IEC 60512-2-1 |
| Shell resistance | <5 mOhm | IEC 60512-2-1 |
| Insulation resistance | > 100 mOhm | IEC 60512-3-1 |
| Shielding effectiveness | > 65 dB | VG 95214-11 |

MATERIAL AND SURFACE TREATMENTS, STANDARD RANGER:

| Type | Material | Surface |
|--|-----------------|---|
| Housing (Conductive parts) | Aluminum Alloy | Ruthenium over Electroless Nickel |
| Housing / nut (Nonconductive parts) | Aluminum Alloy | Black Anodized |
| Back shell (Push-Pull plug) | Aluminum Alloy | Ruthenium over Electroless Nickel |
| Back shell (Break-Away plug and in-line receptacle) | Aluminum Alloy | Electroless Nickel |
| EMC-locking ring | Copper Alloy | Electrodeposited Nickel |
| Crimp sleeve | Copper Alloy | Electrodeposited Nickel |
| Insulator | PEEK (standard) | |
| Pin contact | Copper Alloy | 1.27 µm Gold over Electrodeposited Nickel |
| Socket contact | Copper Alloy | 1.27 µm Gold over Electrodeposited Nickel |
| O-rings | Silicon Rubber | |

CONTACT SPECIFICATIONS, RANGER HIGH DENSITY TECH DATA:

Environmental and Testing

| Type | Performance | Standard |
|---------------------------------------|---|--|
| Tightness | IPX8 / 20 m 120 min IPX9K | ISO 20653:2013-02 MIL-STD-810G:2008-10 512.5 ISO 20653:2013-02 |
| Sand and Dust | Blowing sand and dust IP6KX (settling dust) | MIL-STD-810G:2008-10 510.5 Procedure I / II ISO 20653:2013-02 |
| Operating Temperature | -51°C up to +125°C | IEC 60068-2-1:2007-05 IEC 60068-2-2:2007-10 |
| Thermal Shock | -51°C up to +125°C | MIL-STD-810G:2014-04 503.6 |
| Humidity Cyclic | 85% r.h. up to 95% r.h., 28°C up to 71°C | EIA-364-31E:2017-04 Method V |
| Low Pressure (Rapid Decompression) | 59.1 kPa to 18.8 kPa | NATO-AECTP 300:2006-01 312 Procedure III |
| Low Pressure (operation) | 57.2 kPa, -55°C | MIL-STD-810G:2008-10 500.5 |
| Icing | Rime ice 6mm | MIL-STD-810G:2008-10 521.3 |
| Corrosion Resistance | 96 h salt mist, 5% salt solution, 35°C (2 cycles - 24h spray / 24 h dry) | MIL-STD-810G:2008-10 509.5 |
| Mold Growth | European fungus | IEC 60068-2-10:2005-06 |
| Solar Radiation | Ground level, procedure A | IEC 60068-2-5:2018-04 |

Mechanical Data

| Type | Performance | Standard |
|-------------------------|---|-----------------------|
| Mechanical Endurance | 5,000 mating cycles | IEC 60512-9-1:2010-03 |
| Vibration | 15g (sine) 10-2,000 Hz No discontinuity > 1 µs | EIA-364-28F:2011-02 |
| Shock | 50g amplitude, half sine pulse of 6 ms, no discontinuity > 1 µs | EIA-364-27C:2011-06 |

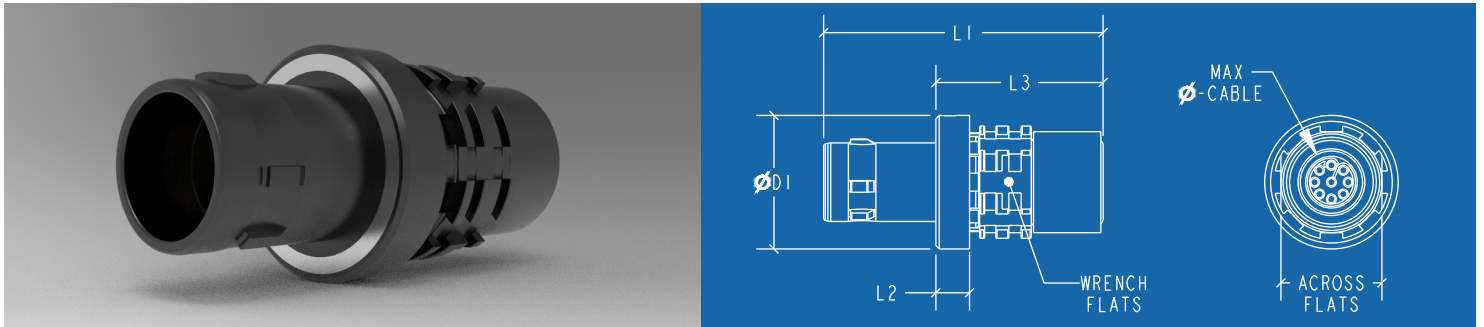
Electrical Data

| Type | Performance | Standard |
|---|--|--------------------------|
| Contact resistance (over 5,000 mating cycles) | Contact diameter / resistance Ø 0.3mm <10mOhm Ø 0.5mm <5 mOhm Ø 0.7mm <4 mOhm | IEC 60512-2-1 2002-02 |
| Shell resistance | <5 mOhm | IEC 60512-2-1 2002-02 |
| Insulation resistance | > 100 mOhm | IEC 60512-3-1 2002-02 |
| Shielding effectiveness | > 65 dB | IEC 62153-4-4 2015-04 |

MATERIAL AND SURFACE TREATMENTS, HIGH DENSITY RANGER:

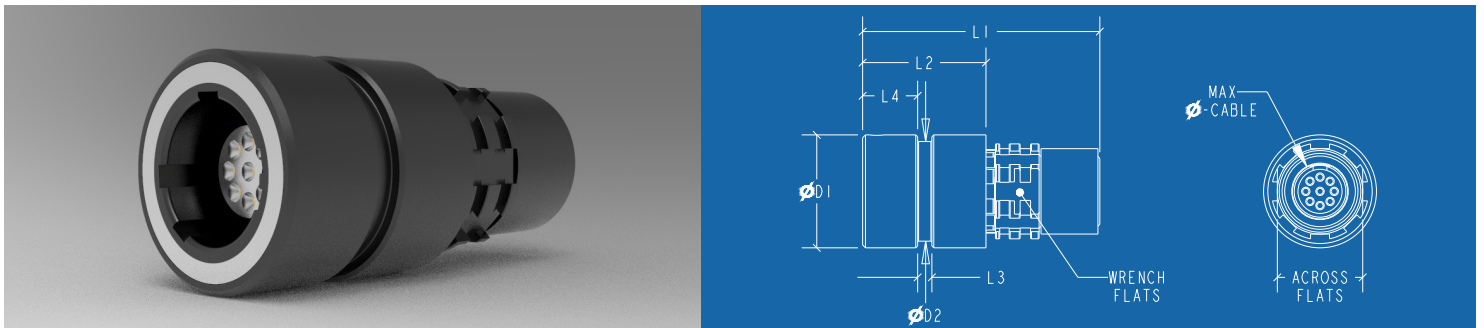
| Type | Material | Surface |
|--|------------------------|---|
| Housing (Conductive parts) | Brass | Ruthenium over Electroless Nickel |
| Housing / nut (Nonconductive parts) | Brass | Black Zinc Nickel |
| Back shell (Push-Pull plug) | Brass | Ruthenium over Electroless Nickel |
| Back shell (Break-Away plug and in-line receptacle) | Brass | Electroless Nickel |
| EMC-locking ring | Copper Alloy | Electrodeposited Nickel |
| Crimp sleeve | Copper Alloy | Electrodeposited Nickel |
| Insulator | PEEK (standard) | |
| Pin contact | Copper Alloy | 1.27 µm Gold over Electrodeposited Nickel |
| Socket contact | Copper Alloy | 1.27 µm Gold over Electrodeposited Nickel |
| O-rings | Fluororsilicone Rubber | |

MEASUREMENTS, STANDARD RANGER BREAK-AWAY PLUG



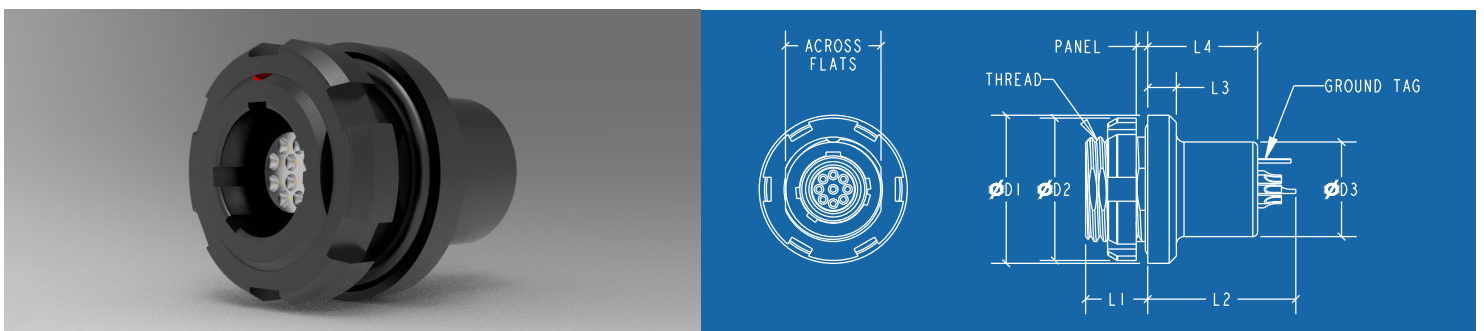
| Size (mm) | L1 (mm) | L2 (mm) | L3 (mm) | D1 (mm) | AF A (mm) | Max Ø-Cable (mm) |
|-----------|---------|---------|---------|---------|-----------|------------------|
| 0 | 25.0 | 3.0 | 15.0 | 11.9 | 9 | 5.5 |
| 1 | 29.2 | 3.5 | 18.4 | 13.9 | 11 | 6.5 |

MEASUREMENTS, STANDARD IN-LINE RECEPTACLE



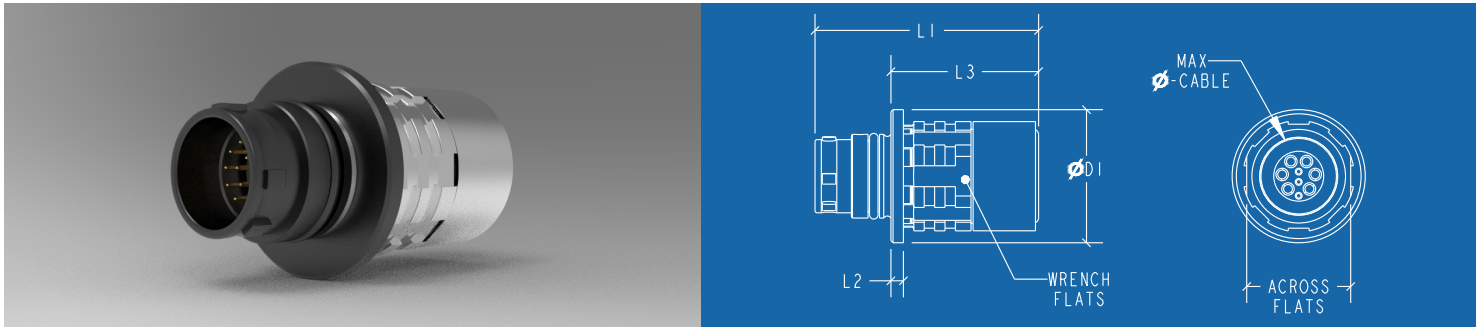
| Size (mm) | L1 (mm) | L2 (mm) | L3 (mm) | L4 (mm) | D1 (mm) | D2 (mm) | AF A (mm) | Max Ø-Cable (mm) |
|-----------|---------|---------|---------|---------|---------|---------|-----------|------------------|
| 0 | 25.0 | 13.0 | 1.5 | 5.8 | 11.9 | 10.5 | 9 | 5.5 |
| 1 | 27.0 | 12.1 | 1.5 | 5.8 | 13.9 | 12.5 | 11 | 6.5 |

MEASUREMENTS, STANDARD PANEL MOUNT RECEPTACLE



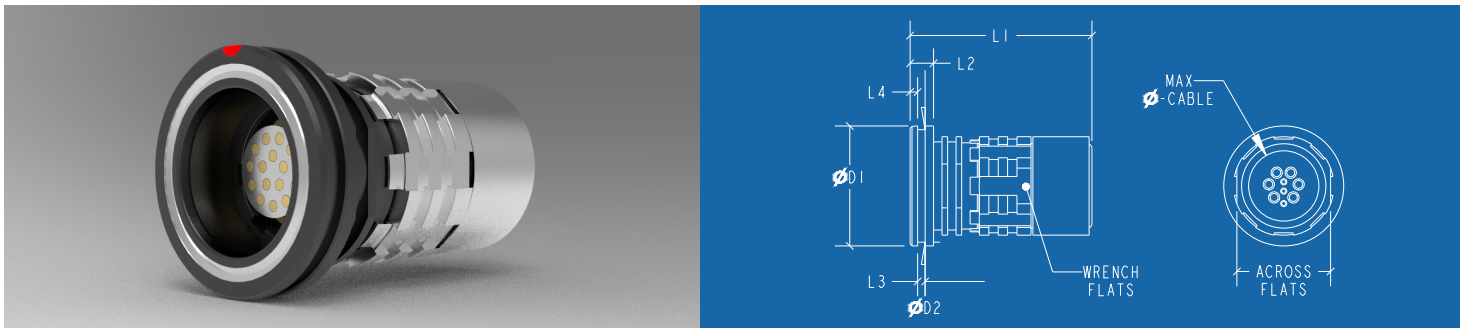
| Size (mm) | L1 (mm) | L2 (mm) | L3 (mm) | L4 (mm) | Panel (mm) | D1 (mm) | D2 (mm) | D3 (mm) | AF A (mm) | M (mm) | Panel Cut Out | |
|-----------|---------|---------|---------|---------|------------|---------|---------|---------|-----------|-----------|---------------|--------|
| | | | | | | | | | | | AF A (mm) | Ø (mm) |
| 0 | 6.5 | 15.5 | 3.0 | 11.5 | 3.0 | 15.5 | 15.0 | 10.0 | 10.0 | 11 x 0.75 | 10.1 | 11.1 |
| 1 | 8.0 | 19.0 | 4.0 | 14.5 | 3.5 | 18.5 | 17.9 | 12.0 | 13.0 | 14 x 1 | 13.1 | 14.1 |

MEASUREMENTS, HIGH DENSITY RANGER BREAK-AWAY PLUG



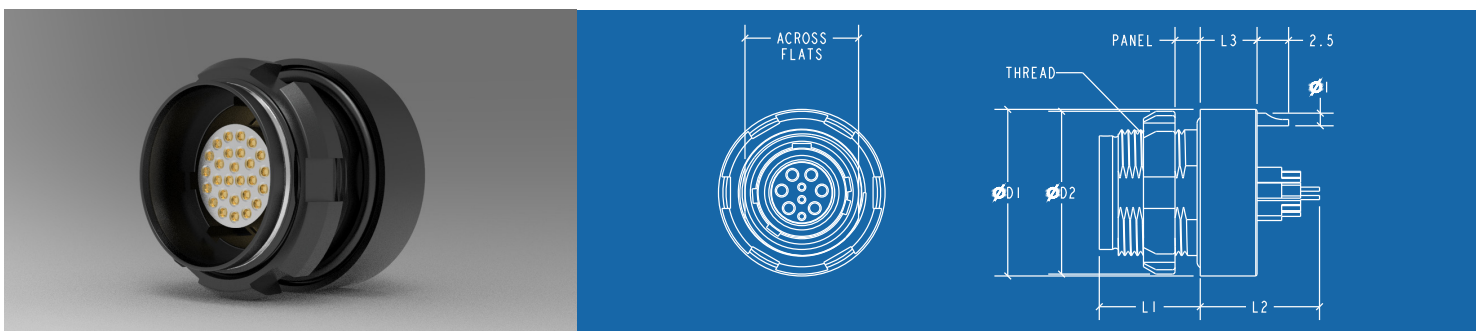
| Size (mm) | L1 (mm) | L2 (mm) | L3 (mm) | D1 (mm) | AF A (mm) | Max Ø-Cable (mm) |
|-----------|---------|---------|---------|---------|-----------|------------------|
| 0 | 21.5 | 1.2 | 14.2 | 12.8 | 10 | 7 |
| 1 | 25.2 | 1.2 | 18.2 | 14.8 | 12 | 8.5 |

MEASUREMENTS, HIGH DENSITY IN-LINE RECEPTACLE



| Size (mm) | L1 (mm) | L2 (mm) | L3 (mm) | L4 (mm) | D1 (mm) | D2 (mm) | AF A (mm) | Max Ø-Cable (mm) |
|-----------|---------|---------|---------|---------|---------|---------|-----------|------------------|
| 0 | 19.5 | 2.5 | 0.8 | 0.8 | 12.8 | 12 | 10 | 7 |
| 1 | 23.5 | 2.5 | 0.8 | 0.8 | 14.8 | 14 | 12 | 8.5 |

MEASUREMENTS, HIGH DENSITY PANEL MOUNT RECEPTACLE



| Size (mm) | L1 (mm) | L2 (mm) | L3 (mm) | X Max. (mm) | D1 (mm) | D2 (mm) | AF A (mm) | M (mm) | Panel Cut Out | |
|-----------|---------|---------|---------|-------------|---------|---------|-----------|----------|---------------|--------|
| | | | | | | | | | AF A (mm) | Ø (mm) |
| 0 | 8 | 8.7 | 4.5 | 4 | 13.2 | 13 | 9 | 10 x 0.5 | 9.1 | 10.1 |
| 1 | 8 | 10.2 | 4.5 | 4 | 15.3 | 15 | 11.5 | 12 x 0.5 | 11.6 | 12.1 |



AMPHENOL NEXUS TECHNOLOGIES

316 Courtland Ave.
Stamford, CT 06906
(203) 327-7300
www.NEXUS.com
